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Discussion paper submitted by the major groups

Summary

It is estimated that over 300 million families live in or near tropical forests. Worldwide, a total of 1.6 billion people depend on forests for subsistence. Over the years, such populations have used knowledge and practices that have ensured their sustenance and survival. This knowledge is most often interwoven with traditional religious beliefs, customs, folklore, land use practices and community-level decision-making processes, and has historically been dynamic and enabled them to respond to changing environmental conditions to ensure that forests continue to provide both tangible and non-tangible benefits. The present paper reviews the role of traditional and local knowledge in the context of sustainable forest management and presents recommendations for integrating and mainstreaming traditional forest-related knowledge in national forest plans and programmes while ensuring the equitable sharing of benefits arising from such knowledge.

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I. Introduction

1. Forests play a vital role in the life and culture of people around the world. The reverence for and adoration of trees has a strong psychological and social foundation in most human cultures. The variety of cultural values and symbolic functions ascribed to forests are as numerous and diverse as the communities and cultures in which they have been documented. Forests feature in all aspects of culture: language, history, art, religion, medicine, politics and even social structure.

2. In many African cultures, trees feature in myths and folklore. Forest trees serve as the link between the sky and Earth and are associated with both creation and the underworld. In parts of West Africa, forests provide the venue for many cultural events. The *arbre à palabre* is a location for social and political meetings with members of the community. These are the locations where elders sit under big trees and talk, argue and discuss issues until they agree. It is a place where political, social and judicial decisions are made. In different communities in West Africa, specific tree species serve as *arbres à palabre*. In Côte d'Ivoire, species such as *Blighia sapida*, *Cordia millenii* and *Bombax buonopozense* are some of the preferred tree species. The Oubangui tribe of Central Africa plants a tree for every newborn child. For female children, a fast-growing tree species is planted. The girl's development is linked to the tree's growth. If the tree's growth declines there is fear for the health of the child and a healer is called upon, and when she is sick, she is brought to the tree for ritual treatment. When the tree starts to bear fruit, it is time for the child to marry. When a person dies, his or her spirit is believed to reside in this personal "birthright" tree.

3. In other regions, there exists a relationship between forests and the spiritual realm. Lord Buddha would sit alone in the depths of the forest in meditation, and it was in the midst of a forest that he was shown the four great truths. The Dai people of Yunan Province in China believe that the forest is the cradle of human life and that forests are at one with the supernatural realm. Forests in European culture were also considered to be sites of miracles and of the search for great spiritual awakenings, and the forest itself was held to be a form of primitive church or temple. The first temples in Europe were forest groves. Ties to nature manifest themselves most notably in Turkish culture. After conversion to Islam, the importance of trees grew in Turkish culture because the Prophet Mohammed compared a good Muslim to a palm tree and declared that planting a tree would be accepted as a substitute for alms.

Sacred groves

4. Sacred groves manifest a range of traditional and cultural values attributed to forests throughout the world. Sacred groves are specific forest sites imbued with powers beyond those of human beings. They are often ancestral burial sites where people can communicate with their ancestors. Trees within these groves are considered as sacred, housing spirits and providing links to ancestors.

5. In some areas, sacred groves are the only intact forests remaining, for example, in the Mijikenda Kaya forests, where the Mijikenda community lives, along the coast of Kenya. Although many cultural traditions are disappearing with the rapidly changing social and physical environment, sacred groves often remain as

valued elements of cultural heritage. The groves are also often the site of ritual healings and locations where villagers find particular plant medicines.

6. Access to most sacred forests is restricted by taboos, codes and customs, to particular activities and members of the community. Gathering, hunting, woodcutting and farming are strictly prohibited to the Dai people in the holy hills in China. However, control over extractive activities in sacred groves varies between communities and cultures.

7. In some communities and cultures a complete ban is not in place, and the limited collection of fallen wood, fruits from the forest floor, medicinal plants and honey, and some other activities, are permitted, even if strictly controlled. Sacred groves in general have survived for many hundreds of years and today act as a reservoir of biodiversity and the library of nature.

8. In some areas, sacred groves play a major part in safeguarding critical sites in the hydrological cycle of watershed areas. In different cultures, some specific forest resources are revered or serve as religious or cultural symbols. The birch in Scandinavia, the larch in Siberia, the redwood in California, the fig tree in India and the iroko in West Africa are widely revered and respected. The oak was worshipped by Romans, Druids, Greeks and Celts as the home deity. In Europe, fairies were said to have made their homes in old oak trees, departing through holes where branches had fallen; it was considered healing to touch the fairy doors with diseased parts of one's body.

9. Trees such as *Ceiba pentandra* (associated with burials and ancestors in the Amazon), *Copaifera religiosa* (associated with fecundity, wealth, power and fame in South America) and *Milicia excelsa* (associated with fertility and birth in West Africa) are sacred to the people. Some trees also serve judicial roles. They form physical boundary markers that define property and provide evidence of usuary rights in judicial disputes. In many traditions in Senegal and Côte d'Ivoire, trees play a central role in the land tenure system. Planted trees provide evidence of land use rights for individual or lineage groups. In Ghana, there are court cases that have been adjudicated in favour of individuals who have planted and tended naturally regenerating fruit trees on a piece of land for several years, without interference, considering such activity as constituting proof of possession.

II. Traditional and local knowledge and sustainable forest management

10. It is estimated that over 300 million families live in or near tropical forests and obtain part or all of their livelihood and food from forests. In fact, a total of 1.6 billion people worldwide depend on forests for their subsistence. Forests are key to non-farm employment for the forest fringe communities. Over the years they have used harvesting methods that are ecologically benign and have ensured their sustenance and survival.

11. The paradigm of sustainable forest management has been widely embraced at the national and international policy levels, but it has not yet been implemented to the point where it is appreciably mitigating the negative trends affecting the world's forests, particularly in the tropics. Sustainable forest management provides an increasingly sophisticated set of policies and tools for managing forests in a more

sustainable way. Implementing sustainable forest management, however, requires overcoming many of the same economic, political and institutional hurdles that drive deforestation and forest degradation.

12. Forest management would benefit from the incorporation of the traditional knowledge of indigenous and local people. Traditional forest-related knowledge has long been known to have implications for forest management, the conservation of forest biodiversity and the identification of forest genetic resources.

13. Traditional knowledge and practices have sustained the livelihoods, cultures and forest resources of local and indigenous communities for centuries. This knowledge is most often interwoven with traditional religious beliefs, customs, folklore, land use practices and community-level decision-making processes and has historically been dynamic, responding to changing environmental, social, economic and political conditions to ensure that forests continue to provide tangible (food, fodder, medicine, water, soil) and non-tangible (spiritual, social, psychological health) benefits to both present and future generations.

14. The current limitations of modern science to deal effectively with environmental issues of increasing magnitude and complexity, including global warming and the conservation of biodiversity, have opened the door to other sources of knowledge. Society can learn from the traditional skills a great deal that is applicable to the sustainable management of complex ecological systems. Traditional knowledge holders have developed extensive knowledge about the spatial and temporal distributions of natural resources, the behaviours of many natural species and the factors that influence them. This knowledge, distinctive to families, communities, tribes and cultures, arises from personal experience and practices passed on from one generation to the next. Over the years, local and indigenous people worldwide have developed a variety of vegetation management practices.

III. Traditional knowledge and medicine

15. Traditional medicine refers to health practices, approaches, knowledge and beliefs incorporating plant and animal-based media, spiritual therapies and combinations to diagnose, treat and prevent illnesses or maintain well-being. In Africa, Asia and Latin America, it is estimated that over 70 per cent of the population uses traditional medicine to meet their primary health-care needs. The World Health Organization estimates that in Europe, North America and other industrialized regions, over 50 per cent of the population has used complementary or alternative medicines at least once, and the global market for herbal medicines is currently valued at over $60 billion, and growing steadily. About 25 per cent of modern medicines are made from plants, and many of these plant-based medicines are used for the same purposes for which the local and indigenous communities had used them. Indeed, traditional knowledge underpins traditional medical practices.

16. The construction of traditional knowledge databases and archives about native groups' uses of local plants is one sure way of combating biopiracy, blocking patents by multinational companies and ensuring that holders and users of traditional knowledge on traditional medicinal plants receive fair reward for such knowledge. A database of traditional formulations is needed to allow examiners to compare patent applications with existing traditional knowledge. India is one of the

countries that has successfully documented traditional knowledge and successfully fought patents granted at the United States Patent and Trademark Office on turmeric (*Curcuma longa*) and at the European Patent Office on neem (*Azadirachta indica*).

17. A number of countries have national regulations or are in the process of preparing regulations on herbs and medicines, but the legislative control of medicinal plants has not evolved around a structured model. It is proposed that an effective legal system for the protection of intellectual property rights of traditional knowledge be established by Governments in order to protect the traditional knowledge of local and indigenous peoples.

IV. Traditional knowledge on forests and climate change

18. There are still major gaps in climate science. Traditional knowledge can provide valuable insight into scientific investigations on the effects on and coping strategies for climate change.

19. Local and indigenous people have lived in changing climates over hundreds of years, and as a result of their close relationship and dependence on forests, they have developed and used diverse tools to assess the impact of the changing climate on their communities and ecosystems and have become resilient and developed adaptive strategies. Local observations of the direct effects of climate change corroborate scientific predictions and include: temperature and precipitation changes; coastal erosion; changes in wildlife; pests and waterborne disease distribution; extreme weather events, for example, droughts and floods; and changing weather patterns. In addition, many local and indigenous communities are able to forecast impending weather based on early warning signs (typically related to the sky and sea, movements of the sun and moon, changes in plant phenology and changes in animal behaviour). As an example, there is already a vast store of information, at the community level, on monsoon prediction.

20. Traditional knowledge can provide scientists and resource managers with a long-term perspective that is lacking in more typical observations and can establish the relationship between the historical impact of land use and climate change. In the context of climate change research, local and indigenous communities provide important sources of climate history, baseline data and expertise at the local level. Traditional knowledge on climate change not only augments scientific information but also promotes scientific enquiry.

V. Integration of traditional knowledge and formal science

21. Despite their important contribution to sustainable forest management and sustainable livelihoods, traditional forest-related knowledge and practices are fast disappearing. The negative implications of this loss of knowledge on livelihoods, culture and biodiversity and the capacity of the forest to provide goods and services remain poorly understood, unappreciated and undervalued by policymakers, and the general public in many countries.

22. The question is whether there is any possibility of integrating formal science and ethnoscience. Empirical evidence suggests the potential for such integration exists. Traditional knowledge systems indeed complement scientific knowledge

systems by providing practical experience in living within an ecosystem and responding to ecosystem change. Traditional and scientific knowledge systems are not mutually exclusive and both are required to achieve sustainable forest management. For example, a study in Nepal showed that traditional knowledge on firewood and fodder values corresponded to scientific assessment. The research revealed that local people's preference for a range of 16 firewood plants and 23 fodder plants was closely related to the fuelwood value index and the fodder value index. In the areas of vegetation classification, distribution, management and growth characteristics, traditional knowledge systems and scientific knowledge systems are in accord with each other.

VI. Recommendations

23. **In the light of the present paper, the following recommendations are made:**

(a) **A new type of partnership is needed between the scientific community, national Governments, international development agencies and local and indigenous people for the management of tropical forests;**

(b) **The scientific community should develop an appreciation of and respect for knowledge systems different from their own that focus on sustaining relationships integral to the entire forest ecosystem;**

(c) **Gaps between traditional and modern science systems should be identified, and indicators for monitoring the role of traditional forest-related knowledge in sustainable forest management should be researched;**

(d) **Local and indigenous people should be provided with adequate training and technical assistance to adapt their traditional land use systems to modern economic conditions;**

(e) **Traditional forest-related knowledge should be documented in close partnership with holders and users of this knowledge system, using ethically appropriate best practices;**

(f) **The general public should be educated on the livelihood and environmental values of traditional forest-related knowledge. A user-friendly knowledge system must be set up at the national level to collect, classify, test and disseminate traditional knowledge;**

(g) **Traditional forest-related knowledge should be mainstreamed into national forest plans and programmes with the involvement of all relevant stakeholders, including local and indigenous communities;**

(h) **Equitable benefit-sharing regimes should be developed for the use of traditional forest-related knowledge;**

(i) **A legal system for the protection of traditional forest-related knowledge should be developed to prevent attempts to patent existing traditional knowledge and curb biopiracy.**